

## 1 GENERAL

- 1.1 The work of this section includes the provision of all design, labour, materials, equipment and services required to fabricate and install special HVAC systems and equipment as required for a complete project. The work includes, but is not necessarily limited to, the items referenced herein:
- 1.1.1 Special Cooling Systems and Devices
  - 1.1.2 Humidity Control
  - 1.1.3 Air Curtains
  - 1.1.4 Special Ventilation Systems
- 1.2 All systems and equipment supplied shall meet the requirements of the Ontario Building Code, local, municipal and Provincial standards, and the requirements of the authorities having jurisdiction.
- 1.3 Similar equipment shall be the supply of one manufacturer.
- 1.4 Equipment shall be sized for its intended service.
- 1.5 Where applicable, make permit submissions to the authority having jurisdiction for systems and equipment.

## 2 DESIGN

- 2.1 Humidity Control
- 2.1.1 Gas fired steam generator system and associated steam distribution hardware for humidification to 25% space relative humidity.
- 2.2 Special Ventilation Systems
- 2.2.1 At conceptual design stage, the *[Design Builder]* shall submit for review their proposal for ventilation system.
  - 2.2.2 The specific design shall be generated in close collaboration with the Owner.
  - 2.2.3 Particular attention shall be placed on need to avoid discharge of atmospheric pollutants to the residential neighbourhood.
  - 2.2.4 The design shall conform to requirements of MOE and Occupational Health.
  - 2.2.5 Notwithstanding the system performance requirements, the following general expectations are noted:
    - 2.2.5.1 The HVAC installations shall be isolated from the remainder of the building so as to avoid contamination of adjoining space. A dedicated ventilation

system shall be provided. This shall be a fully ducted system with capability of access to ductwork for inspection and cleaning.

- 2.2.5.2 The ventilation systems will maintain this space at a negative condition so as to avoid transfer of pollutants.
- 2.2.5.3 The ventilation system will be designed so as to provide a displacement type ventilation result.
- 2.2.5.4 The ventilation system will return the total supply air plus a margin sufficient to generate a negative pressure condition within the space.
- 2.2.5.5 All return air will be filtered to remove heavy metals, smoke, odour, and dust particulates.
- 2.2.5.6 The filtration system will include an electrostatic precipitator with semi-automatic cleaning, panel prefilter and panel after-filter or roll type filter with manual control. The system may also include an activated carbon filter for removal of odour and gas contaminants.
- 2.2.5.7 Once filtered, a portion of the return air will be exhausted. Consideration will be given to a heat exchanger so as to reduce energy consumption and assist achieving the stipulated performance.
- 2.2.5.8 The outside air intake rate will satisfy the minimum rate of 0.812 L/s per m<sup>2</sup> of floor area – stipulated in Section D3000.
- 2.2.5.9 The supply air filtration system will conform to section D3040, as also heating and cooling coils.
- 2.2.5.10 Space will be fitted with a HEPA filtered vacuum system provided by the Owner.
- 2.2.5.11 The commissioning process will include smoke test demonstrations for performance verification.
- 2.2.5.12 Energy consumption will be monitored for this area. Refer to Section D3060.

### **3 MATERIALS**

#### **3.1 Humidity Control**

- 3.1.1 Gas fired steam generator and steam injection Humidifiers:
  - 3.1.1.1 Direct Steam Injection Type stainless steel jacketed duct distribution manifolds. Number to suit duct shape and size.
  - 3.1.1.2 Steam separator with baffle.
  - 3.1.1.3 Steam control valve with electric actuator. for modulating on-off control.

- 3.1.1.4 Steam trap assembly: as recommended by manufacturer.
- 3.1.2 Mechanical Atomizing Type:
  - 3.1.2.1 Cold water centrifugal atomizing type complete with room duct humidistat and drain connection.
  - 3.1.2.2 Parts exposed to water to be non-ferrous.
- 3.1.3 Electric powered electrode steam generating humidifiers are not acceptable.
- 3.2 Dehumidifiers:
  - 3.2.1 Refrigeration type unit complete with electronic controls, humidistats, thermostat, water pressure switch and air vents where required.
  - 3.2.2 Casing to be minimum 20 gauge satin coated sheet metal. Base to be minimum 16 gauge steel reinforced for maximum rigidity. Access panels to be provided for serviceable interior parts.
- 3.3 Air Curtains:
  - 3.3.1 Housing and Inlet Grille to be anodized aluminum. Heating coils to be mounted inside housing.
  - 3.3.2 Fan shall be 2-speed operation.
  - 3.3.3 Electric coils shall be complete with thermal overload protectors, fuse links, contacts, switches and thermostat control.
  - 3.3.4 Hot Water coils shall be to the requirements of Section D3050.
- 4 INSTALLATION**
  - 4.1 Install systems in accordance with manufacturer's recommendations, National and Ontario Building Code, local, municipal and provincial standards and the requirements of the authorities having jurisdiction.

***End of Section***